

# **Expert Review Panel**

## **Meeting Summary**

### **April 4 and 5, 2005**

#### **Harbor Steps Conference Center**

***Panel Members Present:*** Darlene Cimino-DeRose (April 5 only), Alan Kiepper, William Lorenz, Steve Lundin, Mike Meyer, Thomas Schmitt, Siim Sööt, Alonzo Wertz; John Howell (Panel Administrator)

***Speakers:*** *Sound Transit staff* – David Beal, Eric Chipps, Paul Matsuoka, Matt Shelden, Bob Harvey, Andrea Tull; *WSDOT staff* – Craig Stone, Mike Cummings; *Consultants* – Art Borst, Mark Scheibe, Paul Arnold of Parsons Brinckerhoff Quade and Douglas

### **Monday, April 4**

Mike Meyer called the meeting to order at 8:30 AM. The review of the February meeting summary was postponed until the next day (April 5) when Panel member Darlene Cimino-DeRose was able to attend.

### ***Follow-up on Questions and Response from February Panel Meeting***

In advance of this meeting, Sound Transit provided responses to the questions and information requests that the Panel made at the February 10-11 meeting. See “Initial List of Questions, Issues and Requests for Information for 2/10 and 2/11 Expert Review Panel,” in Tab 3 of the meeting notebook.

There was discussion of some of the items, as follows.

- #2, Supplemental Environmental Impact Statement (SEIS): Public comments received – The materials identify the commenters in a list. The Panel members would like to get a sense of what major themes and issues were in the comments.
- #5, Ridership Forecast Model: Puget Sound Regional Council (PSRC) sensitivity analysis on zonal parking costs – PSRC shared this information in March. All current ridership forecasts are based on previous synthetic model inputs. Historically, parking costs have increased by 1.5 percent annually. The parking cost increase projected in the old model was a surrogate for out-of-pocket travel and parking costs. Parking costs are averaged for major urban centers. Sound Transit will be reducing the 3 percent annual growth rate, likely to 1.5 percent.
- #6, Ridership Forecast Model: Peer review – The old PSRC model was not peer reviewed. However, PSRC just completed peer review for the new model.
- #7, Ridership Forecast Model: Employment and population projections – The model did not incorporate any variables about auto ownership. There was an income variable. PSRC hopes to use it its new model this summer. They have run both models to compare results. The new model has a lower transit mode split than the previous model.
- #14, Other Requests: Comparison of cost estimates with actual – The Panel would like to know the comparison of tunnel cost estimates and actual experience. Panel members

would like to see all contract costs including change orders, beyond just engineering bids. The “cost to complete” number would be helpful to the Panel. It’s important to describe the reasons for differences in cost estimates. Distinguish between errors and omissions, scope creep, and changed conditions.

- #15, Other Requests: Projected vs. actual costs of property acquisition – Sound Transit is preparing a response. Before the next Panel meeting, Sound Transit will send the Panel an explanation of its cost estimating methodology for project costs.
- #19, Other Requests: Discussions with other transit providers – Sound Transit staff is preparing a summary of the substance of what they learned from these discussions.
- The Panel asked where Sound Transit is in responding to questions about forecasted ridership vs. actual ridership.

**Definition of HCT:** In response to a question about how Sound Transit defines “high capacity transit” (HCT), Sound Transit staff said that this refers to speed, capacity and movement of people. Sound Transit includes express bus, light rail and heavy rail. Bus Rapid Transit (BRT) can be either dedicated bus ways, or improvements to the High-Occupancy Vehicle (HOV) lane.

### ***Estimating Long-Range Plan Capital Costs***

— David Beal (Sound Transit)

Sound Transit’s cost estimates for the Long-Range Plan are “order of magnitude.” Cost estimates are based on experience to-date of building similar capital projects. For the Sound Transit 2 plan (ST2), they will include administration, contingency, and design cost estimates, not just capital costs. Individual projects are tracked against project history. Sound Transit is using project managers and their construction experts to validate cost estimates.

The order-of-magnitude estimates incorporate right-of-way costs into cost estimates. The estimates do include a factor for mitigation expenses. The level of engineering completed for these order-of-magnitude estimates is between 0 and 1 percent. Sound Transit is also using industry data and data from Seattle Monorail, although they have relied most heavily on the Las Vegas monorail system construction experience. Cost estimates are in 2005 dollars. For ST2 Sound Transit will use 2006 as the base year, and will inflate dollars based on when they believe projects will be constructed.

The range of contingency is 30 to 50 percent, varying by the level of risk or uncertainty associated with major project components. For dedicated BRT, Sound Transit is looking at U.S. Department of Transportation experience. For the BRT stations Sound Transit is using the same station cost assumptions as for light rail.

These order-of-magnitude costs are just for the capital costs. Life cycle costs (including operation and maintenance) will be included in ST2.

## ***Briefing on I-90/East King County Corridor High-Capacity Transit Analysis (issue Paper E-1)***

— Paul Matsuoka and Andrea Tull (Sound Transit)

The 1996 Long-Range Plan proposed potential light rail extensions on I-90, potential rail extensions on I-405, and express bus on Highway 520. For this study, Sound Transit used analysis and recommendations from several existing studies, including the I-405 corridor program, Trans-Lake study, and I-90 Two Way Access project. The analysis of all modal options in this study assumes a new 520 bridge with HOV lanes. All use the same assumption about fares and land use development patterns. The major differences among the modes are:

- Interconnectivity (i.e., light rail interlined from the Eastside to the north; and
- Delays in using downtown streets.

**HOV/BRT.** The bus-only connectors would run counter to the I-405 Record of Decision and state policy regarding HOV system. So Sound Transit looked at freeway-to-freeway HOV connectors. The challenge is that these connections would be very expensive and Sound Transit would not be responsible for building them—Washington State Department of Transportation (WSDOT) would be.

The existing state policy goes back to the 1990s. The state is responsible for freeway-to-freeway connections and building out the remainder of the HOV system. Sound Transit's role has been to build direct access ramps. The cost of bus-only interchanges would be approximately one-quarter to one-fifth the cost of HOV connections.

**Busway/BRT.** Sound Transit would convert the Burlington Northern Santa Fe (BNSF) right-of-way into a two-way busway. At the endpoints (at Eastgate, Overlake, Totem Lake and Newport Hills), the busway would empty into HOV lanes. At the I-90/405 and 405/520 interchanges, use of the BNSF right-of-way would eliminate the requirement to rebuild new interchanges.

**Light rail.** Light rail would have the highest ridership on I-90. According to a WSDOT study, light rail is feasible on the floating bridge. Sound Transit examined tunnel and aerial routes for light rail through downtown Bellevue.

**Monorail.** Sound Transit has worked closely with WSDOT and their consulting engineering firms to do this analysis. A primary criterion was no net loss of freeboard on the I-90 floating bridge. Their original analysis suggested that monorail would be too heavy, so they looked at lowering the structure and making the guide beams out of steel, instead of concrete. The Mount Baker Ridge tunnel is the biggest constraint in terms of height and size of the monorail cars. There is also a significant policy issue about the limited number of vendors, creating potential cost risk.

**Rail convertible BRT.** Sound Transit looked at both tunnel and aerial construction through downtown Bellevue. Cost estimates do not include the costs to convert BRT to light rail. Sound Transit looked at a lot of systems that are building rail-convertible BRT, but has not found a

system that has actually made the conversion (other than the Downtown Seattle Transit Tunnel and the E3 busway).

**Cost and ridership estimates.** Segment by segment costs are in 2005 dollars. Costs do not include vehicle costs or maintenance bases. Ridership numbers are not additive from one segment to another. The capital costs for HOV/BRT on I-90 are lower because the estimate assumes use of the R8A option (with most capital expenditures already completed).

Sound Transit's conclusion from this analysis of options in the I-90 corridor is that no single mode fits *all* of the segments.

### **Questions from the Panel**

Q. What accounts for the large ridership differences in the segment from Seattle's central business district to south Bellevue?

A. The assumption is that BRT is on surface streets in downtown Seattle – most on 2<sup>nd</sup> and 4<sup>th</sup> Avenues. Stops would be every other block. (Note: After the lunch break, Sound Transit provided a handout that shows projected daily transit volumes across Lake Washington on I-90 and 520 combined, for the year 2030. The combined transit ridership volumes on both bridges tend to be very similar for all modes of transit.)

Q. For the different modes, are operating speeds and headways assumed to be the same or different?

A. The assumptions are similar for all but HOV/BRT, where the speed in downtown is slower (because it is assumed that the buses will use surface streets) and speeds in HOV lanes that are separated from general traffic by only a wide paint stripe are lower. See the O&M section of the report for differences in headways. Initially, headways were the same for the scenarios, but after equilibration (balancing of capacity and demand), differed by mode.

Q. Many other communities are looking at HOT lanes to improve the reliability of HOV lanes. Was that considered?

A. WSDOT is doing a pilot study on I-67. The model assumes that by 2030, the vehicles using HOV lanes carry three or more people.

Q. Why is there a difference of 2,000 riders between light rail and monorail in the segment between Bellevue CBD and Totem Lake?

A. The difference results from the fact that for monorail riders a transfer (in Seattle) would be required for any riders continuing on to downtown Seattle or points north. The transfer would have the affect of lowering ridership estimates.

### **Requests from the Panel**

- The Panel would like information about the headways and ridership numbers assumed, and the assumed speeds for the I-90 link for all modes.
- The Panel would like information on the assumptions made about land use changes.

## **April 4, Afternoon Session**

### **Questions from the Panel, cont.**

#### **Operation Across the I-90 Bridge**

Q. Has the feasibility of light rail on the I-90 bridge been studied in terms of the interaction and dynamics between the bridge and the operation of the light rail line?

A. Not in this study, but WSDOT has done computer simulations on this factor. Even with their worst-case assumptions, WSDOT engineers still concluded that the bridge could carry light rail. Sound Transit will do an instrumentation analysis (using heavy trucks to simulate the weight of a light rail configuration) to supplement the WSDOT study with real-world values, and then use those values to run operational scenarios.

Q. Has the flexibility of the light rail equipment been checked?

A. Sound Transit has done some work to look at travel over the transition joints on the floating bridge span, and have concluded that the equipment is workable. There are places in the world where light rail runs on a suspension bridge where there is movement.

Q. Has WSDOT taken steps to protect the viability of the floating bridges in the long run?

A. Sound Transit looks to WSDOT for information on the floating bridge. The light rail and monorail options had to pass the test of no net loss of freeboard on the bridge. WSDOT will make the decision on feasibility, since they own the bridge.

Q. In considering the bridge's ability to handle different transit modes, were you assuming the transit equipment that you are now using or considering for the system?

A. Yes.

Q. Has the Board made a decision on the monorail?

A. Board members have commented on the different mode possibilities, but no decisions have been made yet. Sound Transit will be crafting some hybrid options since there is no one-size-fits-all solution.

#### **Cost Estimates**

Q. In Table 3 in the report, please walk us through the cost estimating, and explain the "pie" rating graphics.

A. For all segments in this study Sound Transit created composite capital costs for a variety of units, and then applied them. Units calculated, for example, include the cost per route-foot of rail and guideway, the cost of stations of different types, the cost for a square foot of right-of-way, the cost of the storage facility and maintenance per number of vehicles, and environmental mitigation as a percentage of unit cost. The rail costs are based on Sound Transit's experience. The bus-based modes are based on WSDOT costs for the running surface and freeway direct access ramps, and Sound Transit's estimates for the stations, and for design and construction contingencies. Other sources are listed on page 45 of the issue paper.

The pie chart graphics represent ratings based on cost and ridership only. The ratings are on a 1 to 5 scale, based on the range divided into five segments. The lowest cost and highest ridership gets the highest rating.

A panel member commented that there is a danger of misleading with the pie chart graphics. They may simplify too much.

Q. Are the design contingencies in Table 7 typical for this region?

A. Sound Transit used a 50 percent contingency for the monorail, based on the agency's lack of experience with this mode and having only one vendor. The other contingencies are based on typical rates used by other agencies.

A panel member noted that the number of monorail vendors who build cars that can fit through the Mt. Baker Tunnel may be limited to one, but two or more vendor options should be available to the Eastside segments.

Q. Did you estimate costs, and then apply the appropriate contingency?

A. The design contingency represents the risk of scope changes. The construction contingency represents unforeseen changes during construction. The order of magnitude cost estimates are based on completion of 3 – 5 percent engineering. The process was to start with the cost per unit, then build it up and apply the design and construction contingency. The construction contingency is ten percent for most construction and fifteen percent for tunnel construction.

Q. It appears that the engineers have been cautious in estimating – the estimates appear to be consistently more than market cost. However, the 15 to 35 percent for contingency in Table 7 is a little low. Usually at this point the range would be 40 to 45 percent.

A. The figures represent a contingency range applied to a cost range. The top of the range may be at 60 percent. When design and construction contingencies are combined, the total contingency ranges from 25 – 60 percent, depending on the project component. After the unit costs are applied and contingencies have been added a cost range is established. The published cost ranges apply a -5 to +30% range to the initial order of magnitude cost estimates.

### **Panel's Information Requests**

- For all ridership estimates, the Panel asked Sound Transit to consider the impact of \$3 per gallon gasoline. [*Note:* Sound Transit arranged for its consultant to attend the meeting the next day to address this question. See page 20.]
- The Panel asked for further information on the issues around dynamics on the floating bridge. [*Note:* Sound Transit arranged for its consulting engineers to attend the meeting the next day to address this question. See page 21.]

### ***Briefing on High-Capacity Transit System Development Issues in the South (Issue Paper S-3)***

—Eric Chipps (Sound Transit)

This issue paper considers how to develop high-capacity transit in the south over time. Currently the southern area is serviced by: Sounder commuter rail (three trains for AM commuting hours, and three for PM commuting hours. A fourth train is being added later this year.); ST Express buses all day from Dupont to Seattle; and Tacoma Link light rail in downtown Tacoma. Central Link light rail will run to S. 200<sup>th</sup> Street in SeaTac.

**Sounder rail.** Sounder commuter rail under the Long-Range Plan will extend south to Dupont. The Long-Range Plan calls for “all-day, every day” service, but does not define the term. The communities would like to see mid-day service and one early evening (late commuter) train. One possibility for these times is a “shadow” bus service that mimics the Sounder route.

Sound Transit’s agreement with BNSF, owner of the tracks, allows up to 30 trains per day. The agreement would need to be renegotiated to exceed this number, and would likely require Sound Transit to make some capital improvements.

There are three Amtrak Seattle-Tacoma trains per day. These do not service the Green River Valley, but do service Tukwila.

**ST Express buses.** Some of the current bus routes provide connections that might eventually be served by Link light rail. Once the light rail is in place, buses might be changed to provide connections to Link or Sounder, or to shadow the Sounder route in off-peak hours.

**Link light rail.** One possibility in the future is to extend Tacoma Link light rail north and/or to bring Central link south of the airport. It is not certain that they will connect, however. The capacities of the two systems differ. Tacoma Link’s stations would not be able to accommodate Central Link’s four-car trains.

## **Questions from the Panel**

### **Sounder/Rail**

Q. Who owns and operates the existing rail?

A. Sound Transit purchased the rail from Tacoma to Lakewood, and BNSF owns the tracks from Everett-to-Tacoma (through Seattle). BNSF operates the service; Amtrak does the vehicle maintenance.

Q. What is the Sounder capacity under the agreement with BNSF and what is funded?

A. Under the BNSF agreement, Sound Transit could operate up to 30 trains per day. Sound Move funds a total of 18 (nine trains in the AM and nine in the PM). The difference between 18 and 30 is unfunded.

Q. What are the ridership assumptions for Sounder trains?

A. The forecast with 18 trains/day was for 12,000 to 14,000 riders. With only the six trains/day Sound Transit has now, there are 2,800 riders.

### **Mode Comparisons**

Q. If light rail were to connect Tacoma and Seattle, wouldn’t the trip take less time than on heavy rail (Sounder)?

A. The time is comparable – approximately 60 minutes.

Q. How does Sounder service compare with ST Express bus service?

A. Sounder is more reliable in terms of departure and arrival times; the express buses can get bogged down in traffic. However, the buses make more stops in Seattle (Sounder arrives at King

Street Station), so may be more convenient. Buses currently travel the Tacoma to Seattle route in approximately 50 minutes. However, reliability is uncertain.

### **Planning**

Q. If there is existing service that can be supplemented by bus, could Sound Transit defer extending light rail south of the airport and instead move assets to other parts of the system?

A. Yes, ST could choose to do that, within the limits of subarea equity.

Q. Is an “all-day, every-day” service goal realistic?

A. The Board may need to define “all-day, every day” service, as used in the Long-Range Plan. Costs to achieve this level of service could be significant, but this would not be known until negotiations with the BNSF were well advanced.

### ***Briefing on Tacoma Link Integration with Central Link (Issue Paper S-1)***

—Eric Chipps (Sound Transit)

In Sound Move, a light rail line between Seattle and Sea-Tac Airport (Central Link), and in downtown Tacoma (Tacoma Link), was proposed. The Central Link is under construction and Tacoma Link is operational. This issue paper explores the possibility of connecting the two systems to run from Seattle to Tacoma.

The main challenge is that the two systems have different demand and passenger capacities. Central Link will eventually need four-car trains to handle the projected ridership between Sea-Tac and Seattle, while Tacoma Link currently operates with a single-car train. Ridership projections justify running four-car trains to Federal Way, but not all the way to Tacoma. The stations in Tacoma could be expanded to accommodate two-car trains, but not four cars. Tacoma Link also operates at a different voltage and has a different turning radius from Central Link.

The alternatives for connecting the two systems are:

1. Two-car trains from downtown Tacoma to Federal Way and points north, with no transfer.
2. Two-car trains from the Tacoma Dome to Federal Way and points north, with a transfer to the Tacoma Link at the Tacoma Dome.
3. The same two options were explored for four-car trains.

### **Questions from the Panel**

Q. What is the ridership potential for light rail from Tacoma to Seattle? Is there any other reason to modify Tacoma Link?

A. By the year 2030 the projected daily passenger volumes are 20,400 between Tacoma and south Federal Way, 33,800 between south Federal Way and SeaTac, and over 53,000 from Sea-Tac to Seattle. Tacoma Link is now carrying 2,800 riders per day, which is more than projected. It is possible that the Tacoma stations will need to be renovated anyway just to add the needed capacity for Tacoma. It is projected that with service connection between downtown Tacoma and downtown Seattle (with a transfer point at the Tacoma Dome Station) ridership for Tacoma Link will increase to 13,000 by 2030.



Q. What were the assumptions for these ridership projections?

A. It was assumed that the light rail line would operate two-car trains within Tacoma, and four-car trains between Tacoma Dome Station and Seattle. They include Sounder trains running every 30 minutes and no ST Express bus service.

Q. Did you compare direct (no transfer) Tacoma-Seattle express bus service with direct light rail?

A. No, Sound Transit would look at this option for Phase II, not in the Long-Range Plan.

### ***Briefing on Potential Tacoma Link Extension to the West (Issue Paper S-4)***

—Eric Chipps (Sound Transit)

The question of possibly extending Tacoma Link light rail to the west came up during scoping. The area to the west of the current Link system has some dense multifamily housing and older single family homes. It was assumed that the line would extend toward the Tacoma Narrows bridge to Tacoma Community College (TCC). There is currently high transit ridership to the TCC Transit Center. To explore the possibilities, Sound Transit looked at three possible alignments, but used order-of-magnitude costs, not costs for the exact routes. The distance involved would be 6 to 6.5 miles. The existing Tacoma Link is 1.8 miles long. The western extension was assumed to be at-grade, so it would likely take up a traffic lane.

Sound Transit estimated there would be 15,500 riders by 2030 for this extended system, and the cost would be \$400 million to \$600 million. The demand level would generate all-day ridership and require larger cars than are now used on Tacoma Link – more like the cars on Central Link (Seattle to SeaTac).

### **Questions from the Panel**

#### **Connection to Current Tacoma Link**

Q. Does the decision on connecting Central Link and Tacoma Link tie in to this possible extension of Tacoma service?

A. Yes – The question is what we want to do with Tacoma Link over the long-term.

Q. Sound Transit's materials say that Tacoma Link is a success. How was this assessed given that it is a free system?

A. The statement is based on the fact that the ridership has already exceeded the original projection. Sound Transit has also heard many positive comments from riders and elected officials about the value of the service to Tacoma residents and businesses.

#### **Ridership Estimates**

Q. Does the 15,500 ridership estimate assume that a fare will be charged?

A. Yes, Sound Transit assumed there would be a fare for trips on the projected western extension, but not for the current Tacoma Link segment for which no fare is charged today. Of course, any decision about fares would need to come back to the Board for a decision. For the current length of Tacoma Link, the cost of putting in ticket machines and counting fare receipts would exceed the fares taken in. But fares could be done on a zonal basis, with no cost for transferring.

Q. Are there any forecasts for bus ridership on 6<sup>th</sup> Avenue [the primary street on which the western extension is assumed to run]?

A. Sound Transit is not aware of any projections Pierce Transit has made for this street, but can ask. The Pierce Transit route extends much farther than the projected Link route, however.

### **Cost Estimates**

Q. The Seattle to Bellevue light rail is projected to have more riders but a lower cost. Why?

A. The right-of-way on the floating bridge for Seattle-Bellevue already exists.

Q. The cost estimate seems high for this length. It was noted that a six-mile segment of light rail in San Diego that included some tunneling and aerial structure, cost \$500 million.

A. The estimate includes the cost of additional rolling stock, and between six and seven stations with two-car-length platforms. The street right-of-way may be a cost challenge, too, because the streets are not very broad. For comparison, the final cost for the current Tacoma Link system was \$85 million.

### ***Briefing on Potential Tacoma Link Extension to the East (Issue Paper S-6)***

—Eric Chipps (Sound Transit)

This review is a restatement of work done last year, which Sound Transit undertook at the request of the Puyallup Tribe. The Tribe is putting in a casino and hotel complex to the east (Cascades Casino site).

The site is 1.5 miles from the Tacoma Dome. The route is primarily industrial and waterway, with a very constricted area along Puyallup Avenue. To the south is a residential area, but it is not very dense. City of Tacoma and WSDOT rights-of-way would be needed. Several alignment options were explored south of I-5, approaching the casino site. Sound Transit does not know enough about the casino development plans to be able to forecast ridership. The potential costs, including two stations, range from \$38 million to \$70+ million. The high end of the range would be for larger stations to accommodate two-car-length trains.

### **Questions from the Panel**

Q. Does the cost estimate include rolling stock? Rights of way?

A. Rolling stock is included. The rights of way would not be purchased but would be easements from the City of Tacoma and WSDOT. If Central Link were extended, one of the alignments would be along Puyallup Avenue, so that would already make up part of the route.

### ***Summary of Questions and Information Requests from the Day***

John Howell and Mike Meyer summarized the questions raised so far that might be addressed the following day.

1. The impact of rising gas prices on ridership modeling. [*Note:* Sound Transit's consultants addressed these issues the next day. See page 20.]

2. Light rail and monorail on the I-90 floating bridge – engineering questions about both the bridge and the rail system. [*Note:* Sound Transit’s consultants addressed these issues the next day. See page 21.]
3. Need to rebuild interchanges at I-5 and I-405 to build a busway, the Record of Decision for 405, and issues of cost. [*Note:* WSDOT consultants addressed these issues the next day. See page 20.]
4. Financial forecasting questions – The Panel will need to return to financial forecasting questions tomorrow when Darlene Cimino-DeRose is present.
5. Cost estimating – The Panel would like to get more comfortable with the way costs are estimated. David Beal will provide more information on this.

Mr. Meyer asked if the Panel was being asked to comment on the SEIS for the Long-Range Plan. Mr. Howell stated that if the Panel has comments on the SEIS, Sound Transit staff have said it would be helpful to get those sooner than other comments.

The meeting adjourned for the day at 3:45 PM.



## **Tuesday, April 5**

Mike Meyer called the meeting to order at 8:35 AM. He welcomed Panel member Darlene Cimino-DeRose, who was able to attend the meeting today only.

### ***Review of February Meeting Summary***

There was one correction and one question in the meeting summary. In the February 11 summary on page 8, Dr. Siim Sööt’s comment should read: “Siim Sööt noted that nationwide, employment grew more rapidly than did population in the 1980s and ‘90s.” (correction underscored)

In the February 10 summary, page 1 under I-90 Corridor, the 3<sup>rd</sup> paragraph, first sentence reads: “It is projected that the R-8 configuration in the I-90 corridor would reduce congestion to zero, from an estimated four hours per day.” Is “reduce congestion to zero” correct? Mr. Howell will check with Sound Transit.

Mr. Howell noted that the meeting summaries will be on the Panel’s Web site, which should go live on the Web soon. In response to a question from the Panel, Mr. Howell said that he will make sure that the meeting summaries are also sent directly to the Panel’s sponsor organizations to keep them apprised of the Panel’s work.

### ***Questions from February Meeting***

#### **Financial Forecasting**

Mr. Meyer asked Ms. Cimino-DeRose if she had further questions about the financial forecasting information the Panel had requested and Sound Transit supplied. (See “Initial List of Questions, Issues and Requests for Information for 2/10 and 2/11 Expert Review Panel,” under Tab 3 in the meeting notebook.) These were Questions 16, 17 and 18.

Ms. Cimino-DeRose said that she received the requested materials and still needs to talk with a Sound Transit staff person about the forecasting model. Since this is not the main focus for the Panel currently, there is still time to make the contact.

## **Financing Policies**

Sound Transit staff noted that the agency is now reviewing a debt service coverage policy for Central Link, and will send that to the Panel when it is final.

At Sound Transit's recent Board meeting, a question arose about the subarea equity policy. In practice, the subarea equity principle requires detailed accounting work. The Board's Finance Committee and the Chief Financial Officer will look for ways to make this system more efficient. Among the issues to be reviewed is the question of how to account for a project in one subarea that benefits other subareas. While subarea equity was not in the authorizing legislation, it was included in Appendix B of the Sound Move Plan, which was approved by voters.

## ***Briefing on I-5 Corridor, Northgate to Everett, High-Capacity Transit Assessment (Issue Paper N-2)***

—Matt Sheldon (Sound Transit)

This study was of a 20-mile corridor north along I-5, between Northgate and Everett, and included two potential route options from Northgate to Shoreline: (1) State Route 99, and (2) 15<sup>th</sup> Ave. NE; and an additional option (3) from I-5 at Mill Creek, to Paine Field, and on to Everett.

Sound Transit estimates the ridership for 2030 as follows:

- Daily riders between Shoreline and Northgate range from 65,000 to 66,000, depending on the route
- Daily riders between Association Way (just north of Lynnwood) and Northgate range from 47,000 to 50,000, depending on the route
- Daily riders between Everett and Northgate range from 38,000 to 44,000, depending on the route.

The order of magnitude costs would be between \$3.3 billion and \$4.2 billion for the I-5 alignment, between \$4 billion and \$5 billion for the Paine Field route, and between \$3.5 and \$4.4 billion for the 15<sup>th</sup> Ave. NE route. The annual operating and maintenance cost would be approximately \$90 million, with an additional \$18 million estimated for the Paine Field route and an additional \$8 million for the SR 99 route. These costs assumes running at grade as much as possible. However, there is a potential for roadway expansion for I-5 in this corridor that would diminish the right-of-way.

The alignment alternatives serve somewhat different purposes. The I-5 corridor is primarily peak-period commuter traffic, heavily dependent on Park and Ride availability. The Paine Field alignment would serve workers for Boeing and other businesses. The SR-99/15<sup>th</sup> Ave. NE alignment would serve more short trips. The Paine Field alignment would add approximately 6,000 daily riders between Northgate and Everett, but at a substantial cost. It would also add approximately 10 minutes in travel time for riders traveling from Everett to Seattle. Routing along SR-99 would add another \$590 million to \$760 million, and along 15<sup>th</sup> Ave. NE would add

\$150 million to \$200 million. The latter two routes would not add many riders. The estimated 2030 ridership for these two routes are very similar to the I-5 alignment, and travel times would also be similar, with the 15<sup>th</sup> Ave. NE route taking approximately four more minutes to travel to Lynnwood and Everett.

## **Questions from the Panel**

### **Mode Choice**

Q. Does the Seattle Monorail have any plans to extend to this area?

A. The monorail's long-range plan is to extend their Green Line to Northgate and northeast to Lake City. There are currently no plans to go further north. The Seattle Monorail Project long-range plan includes a potential future line along SR-99 between downtown Seattle and the northern city limits. (Note: The Panel was reminded that on their tour of the region on February 10<sup>th</sup>, Monorail officials stated that they hoped to work with Sound Transit on developing a long-range plan for SR 99. See notes from February 10<sup>th</sup>. This is also referenced in the Sound Transit study of BRT on SR99.)

Q. Why were other mode choices not considered for this corridor?

A. Light rail is already being constructed in the I-5 corridor. The design is well underway to extend north to Northgate. It makes sense to continue north with the same technology. The Board-approved Long-Range Plan designates this corridor as light rail. There have been no suggestions from Board members or staff to reconsider that direction.

Q. Why is Bus Rapid Transit not being considered?

A. The technology analysis that was done in the 1990s is the basis for the determination that light rail was the best choice for this corridor. ST express bus services operating along the corridor today. Combined with the Park and Ride expansion, HOV direct access ramps and use of HOV lanes on I-5, this service forms the basis of a BRT network along I-5 north.

Q. Have mode choices been reviewed since the 1990s?

A. In the early planning phase, the PSRC conducted a corridor review and concluded that this corridor is so rich in riders that it deserves more than one mode. Sound Move Phase I included starting light rail in the I-5 corridor, along with building a BRT system with direct access ramps at Lynnwood, Ash Way and 112<sup>th</sup> in Everett. If extension of light rail is included in ST2, but the voters don't approve Phase 2, the BRT will be in place for the long-term. If Phase 2 funding for light rail in this corridor is approved, the BRT would be reduced in the I-5 corridor and replaced with the light rail. Sound Transit is also looking at an arterial BRT on Highway 99.

Q. Is Sound Transit currently considering an alternative for I-5 that is a BRT connection to Everett?

A. No. [NOTE: Since the ERP meeting, ST has undertaken a study to explore BRT options in the I-5 North Corridor]

Q. How many of the BRT improvements in the corridor could be used by light rail?

A. Some BRT facilities, such as the stations, could be used by light rail, while others, such as the BRT ramps could not. (The turning radius of the BRT ramps would not work for light rail.) Also, the use would depend on the final decision about the light rail alignment.

Q. How much weight does the mode choice in ST1 have in the decision for ST2? It seems wise to reexamine prior decisions, but introducing a new mode, such as monorail, adds costs in training, equipment, etc.

A. In the SEIS, there is a No-Action alternative. In this case, no-action would mean no rail north of Northgate, but continuing to use the BRT. No-Action in the EIS also assumes no additional service or capacity.

### **Ridership, Service and Cost Assumptions**

Q. Is the expectation that the same riders taking the BRT would switch to light rail?

A. Yes. Either way they are Park-and-Ride-based or would use a local bus to connect to the station.

Q. Have you looked at whether expanding the BRT system would add riders?

A. No, we have not studied this.

Q. What service characteristics are you planning north of Northgate?

A. The assumptions are for 2½-minute peak headways from Northgate to Lynnwood, then 5-minute peak headways to Everett. The non-peak headways would be 7½ minutes for the whole corridor. All lines would come to Northgate. In peak hours, some trains would continue to Everett.

Q. Can we get written confirmation of these assumptions?

A. Yes, there was a sensitivity analysis for the EIS.

Q. Two-and-a-half-minute headways would be challenging from a systems standpoint. Would it be better to assume 5-minute headways?

A. Some of the headways on bus service are 2½-minute now. This is also the combined headway for peak hours through the tunnel in Seattle to Northgate.

Q. Have the engineers studied these headways in the tunnel? The challenge is not just the number of trains at 2 ½ minutes, but the bottleneck for trains from different directions.

A. Yes, the engineers have looked at this extensively.

Q. Do the costs include the rolling stock needed to sustain 2½ -minute headways?

A. The planning estimates are “order of magnitude.”

### **Alignments**

Q. Would the Paine Field route draw additional riders even though it is slower?

A. The catchment area for the Boeing plant is wide. The assumption is that the line from Everett to Paine Field would draw riders from north of Everett who are going only as far as Paine Field.

Q. Would the station be within walking distance of the Boeing plant?

A. Yes.

Q. If the route stayed on I-5, could a bus distributor system get riders to the main employment centers at Paine Field?

A. Yes, but transfers would have a negative impact on ridership. The Paine Field alignment would bring workers to the door at Boeing, and to other businesses along the route.

### **Board Action**

Q. What action do you anticipate the Sound Transit Board taking this summer?

A. The Board is interested in looking at possible alignments, but we don't need to define exact alignments in the Long-Range Plan.

### **Panel's Information Requests:**

- The Panel asked for written confirmation of the assumptions for service characteristics north of Northgate, which are in the sensitivity analysis for the EIS.
- The Panel requested the engineering analysis of 2 ½-minute headways for light rail in the downtown Seattle tunnel, and information on how the merge of train lines would work at these headways.
- The Panel would like to see the assumptions on rolling stock to accomplish 2½-minute headways.

### ***Briefing on BRT in the SR-99 Corridor (Issue Paper N-1)***

—Matt Shelden (Sound Transit)

This paper looked at Bus Rapid Transit (BRT) service on Highway 99 between Everett and downtown Seattle. This is currently a significant transit corridor, with 12,000 daily boardings. The data for this study came from a study that Community Transit did last year of the Snohomish County portion of the route.

Currently, three companies provide service along parts of this route: King County Metro, Community Transit in Snohomish County, and Everett Transit. A trip across the whole route requires two transfers. There is a good deal of local support for high-capacity transit on this route.

Sound Transit BRT service in this corridor would operate on Business Access Transit (BAT) lanes and would travel at 10-minute headways.

Community Transit's study assumed that there is light rail from downtown Seattle to Northgate. Using PSRC ridership assumptions, they forecast more than 21,000 daily riders on the BRT route in 2030. Sound Transit assumed that there would be light rail all the way to Everett. Sound Transit estimated there would be 10,000 to 15,000 additional riders by 2030. However, only 10 percent of trips would cross the county line. Capital costs would range from \$237 million to \$282 million for Business Access Transit (BAT) lanes, rolling stock, stations and roadway improvements – about \$8 million to \$10 million per mile. Annual operating costs would range between \$5.2 million and \$6 million.

This corridor is currently designated in the Long-Range Plan as regional express bus service. To change to BRT would require partnership and significant coordination with local transit

companies, and agreements on such issues as who pays for which portions and how to credit ridership. While BRT would provide speed and reliability, there would be trade-offs to consider between speed and access (number of stops).

### **Questions from the Panel**

Q. Why is Sound Transit looking at SR-99?

A. It's a regional corridor. There were significant comments, during the scoping process for the SEIS, requesting this analysis. Sound Transit's study looks at demand and the nature of the use of high-capacity transit in this corridor.

Q. Could this route be another alternative for light rail in the north-south corridor?

A. Yes. The market for travel in this corridor is different from the I-5 corridor. The SR99 corridor is all-day, off-and-on travel, while I-5 is primarily peak-hour commuting. PSRC's analysis showed significant demand in both corridors.

Q. Is King County Metro looking at BRT?

A. Metro is moving in that direction for their portion of the corridor in King County. Metro and Community Transit have also begun to talk about the possibility for cross-county service.

Q. The paper mentions the Seattle Monorail long-range plan. Has a monorail extension been considered?

A. No, in the Monorail's long-range plan, service would go to Northgate, then possibly to Lake City, but no further north. The Monorail's authority does not extend outside the City of Seattle. (Note: The study states the Seattle Monorail Project is unlikely to develop its blue line in the SR 99 corridor in the near term, but it will continue to consider the corridor for future, long-range expansion of service.)

Q. Does the BAT involve adding a lane?

A. Mostly yes, though in some cases there is impact to the center turn lane. Tests by King County Metro of signal priority show little impact to the system. This would be a *request* for priority, but depending on traffic volume, the request might not be granted.

Q. What are the assumptions for the annual operating cost?

A. Sound Transit assumed 10-minute headways. To the extent that the local transit companies might restructure their service, this could affect the costs.

Q. Is it feasible to calculate cost per rider at this stage?

A. The analysis would be very rough analysis at this point.

### ***Briefing on SR-522 Corridor High-Capacity Transit Assessment (Issue Paper N-4)***

—Matt Shelden (Sound Transit)

This paper considers whether the direction established in the current Long-Range Plan should change from BRT to rail for this corridor, from Northgate to the University of Washington's Bothell campus. The rail could be either light rail or monorail. Monorail stations are smaller and less expensive to build, but monorail would need a maintenance facility in this corridor. Light



rail could use the main light rail maintenance facility. If Seattle Monorail builds an extension to Lake City, it might be possible to connect with monorail on SR-522 by adding an extension between the Lake City monorail station and 145<sup>th</sup> Street.

Rail could provide a substantial travel time improvement over BRT, and might add some riders. But it will be expensive to construct a rail system in the 522 corridor because of the need to elevate much of the route. (The 9 percent slope between I-5 and 145<sup>th</sup> Street would require an elevated rail structure as high as 60 feet.) This study assumes 10-minute headways in peak hours and 20-minute in off peak.

Current daily bus ridership on SR-522 measured at Lake Forest Park is 3,800 passengers. The daily bus ridership for the proposed 522 route is projected to be 2,700 in 2030; rail is projected to be between 3,500 and 6,700 daily, depending on operating headways. The projected bus ridership for 2030 is less than the ridership today because rail along I-5 is expected to draw riders away from SR 522.

The estimated capital cost for rail is \$1.3 billion to \$1.9 billion (there could be some cost savings if sections were built at grade), while BRT would be between \$91 million and \$125 million. However, operating and maintenance costs for BRT are higher: \$5 million to \$6 million annually, as compared to \$4 million to \$5 million for monorail, and \$3 million to \$4 million for light rail.

## **Questions from the Panel**

### **Ridership**

Q. If you rank the ridership potential of all the extensions, where would this one fall?

A. Since this corridor would be less than 10,000 riders a day, it is at the middle to lower part of the spectrum. The projection for this corridor is up to 6,700 riders. The No-Action alternative would be 3,700 riders.

Q. So there would not be much payoff to go to rail in this corridor?

A. No, because we are assuming there is rail in the I-5 corridor.

Q. Why would rail on the I-5 corridor draw away riders? It's a substantial distance away.

A. People will drive up to 10 miles to use Park and Ride lots to get reliable, frequent transit service, which is projected for the I-5 route.

### **Alignment**

Q. If Lake City (at NE 125<sup>th</sup>) is a large market, why wouldn't this alignment run from the Monorail extension in Lake City as the southern terminus?

A. Sound Transit staff was asked to look at a route option on NE 145<sup>th</sup>. If there were to be further work on this corridor, the staff would recommend considering a Lake City connection.

Q. What are the right-of-way impacts on 145<sup>th</sup> for rail vs. BRT?

A. The impacts would be similar because of the narrow right-of-way. For rail, Sound Transit would have to acquire right-of-way on the side of the road. BRT would require a traffic lane.

## ***Briefing on Seattle Streetcar Options (Issue Paper N-3)***

—Matt Shelden (Sound Transit)

Sound Transit was asked to look at three possible streetcar lines in Seattle:

1. Extending the existing Waterfront Streetcar north to Interbay (location of Amgen's corporate campus);
2. Extending the existing Waterfront Streetcar east to 23<sup>rd</sup> and Jackson in the Central Area; or
3. A new line in South Lake Union to the University District

Sound Transit relied on City of Seattle analysis for this paper.

The South Lake Union line would involve 1.5 miles, then a 2-mile extension to the University District. The South Lake Union area would have the greatest ridership potential of any of these possibilities. This area includes the campus of Fred Hutchinson Cancer Research Center and other research facilities. Sound Transit estimates 3,600 to 4,100 daily boardings. The Waterfront Streetcar extension to 12<sup>th</sup> Ave. S. and then to 23<sup>rd</sup> and Jackson would have 800 to 900 daily boardings. The extension north to the Amgen campus would have 200 to 300 boardings.

The cost of the segment from downtown to South Lake Union is the highest of the three lines. It is estimated at a capital cost of \$45 million, and an operation and maintenance cost of \$2.1 million. The capital cost of extending the street car to the University District was not determined.

Streetcars are not currently in the Long-Range Plan. The biggest question is whether this mode has a place in a regional transit plan. These streetcars would have no priority in traffic, compared to Tacoma Link, which has a signal priority and its own right of way. Sound Transit staff have suggested the following criteria for the Board's consideration:

- Priority in traffic
- Connection to high-capacity transit
- Starter segment for high-capacity transit
- Ridership potential
- Level of partnering and investment by others.

### **Questions from the Panel**

Q. What type of vehicles are proposed?

A. The City of Seattle is developing a long-range plan and planning to replace the vintage cars with updated vehicles.

Q. The ridership is marginally higher than Tacoma Link light rail, and the length comparable. Are operating cost differences because of the fares?

A. Sound Transit is not sure what the City of Seattle assumed for fares or land use development patterns, and if their assumptions are consistent with the PSRC analysis. The current Waterfront Streetcar does have a fare.

Q. How would this contribute to the regional nature of Sound Transit's service? It seems more of a local and recreational addition.

A. That is the question the Board will need to consider. Sound Transit's authorizing legislation calls for the agency to do high-capacity transit, but also supporting facilities and services. The

kinds of services proposed here might provide feeders for other Sound Transit services. The system would connect with regional services at the International District tunnel, and possibly at Westlake. Once the main lines are built, this kind of service could be added under subarea equity, but that would be in Phase 3 or later.

Q. It's hard to make sense of the costs in a case like this where we are using another agency's studies. The per-mile cost here is very different from Sound Transit's estimate for Tacoma, for example.

A. Sound Transit will provide the Panel with more detailed information about its cost methodology in the next month. Sound Transit's estimates including all surrounding project costs – right-of-way, signal costs, etc. For the Seattle Streetcars, however, the City of Seattle was looking at light technology with no signal priority and no sidewalk rebuild. For the unit costs, Sound Transit checked these to make sure they are consistent with Sound Transit's methodology.

### **Panel's Information Requests:**

- The Panel asked why there is such variation between cost estimates for the same mode of transit at different locations (i.e. light rail in West Tacoma vs. other locations). They would like more information about the differences in costs for each corridor.
- The Panel asked for the cost per mile for the Beacon Hill tunnel, as an indicator of the cost of tunneling.
- For modeling and ridership forecasting, the Panel asked for the assumptions Sound Transit is using on ridership for all corridor studies, including:
  - Headways
  - Average speeds
  - Number and type of cars
- The Panel asked if the question of evacuation of passengers in a monorail system (or elevated light rail) has been considered, and whether provisions for evacuation are included in cost estimates.
- Panel members would like the I-90/East Corridor study in electronic form.

### ***Comments from the Public***

Mr. Meyer asked if any members of the public wanted to offer comments.

**Will Knedlick** thanked the Panel for their service and the preparation shown in the questions they have asked. He referred the Panel to his e-mail of February 28 and letter of March 31, which are included in the meeting notebook under Tab 11.

Mr. Knedlick stated that no funding currently exists to build light rail north of the downtown tunnel to the University District, or further north to Northgate. He questioned the wisdom of basing future plans on the assumption of having light rail at Northgate, and only rail in the downtown transit tunnel. He said that if these assumptions about light rail are flawed, then the projections for ridership from Seattle to Bellevue across I-90 are also flawed. He suggested that all the projected light rail routes be compared to the ridership and cost of BRT, and that a planning assumption be that buses continue to use the downtown tunnel. He stated that these steps are needed to fulfill the requirement of least-cost planning.

**Don Padelford** discussed HOT lanes. He stated that, since the date of Sound Transit's original plan, a number of communities in the United States have gained experience with using pricing, through HOT lanes, as a way of regulating traffic flow. The HOT lanes are primarily for buses, van pools and car pools. However, nontransit vehicles are allowed to use the lanes for a fee, which may vary by the time of day. Mr. Padelford suggested that HOT lanes can provide the benefits of dedicated lanes without the drawback of taking a lane away from traffic. While BRT in HOT lanes has not been done elsewhere, he believes it would work with off-lane loading. Mr. Padelford questioned whether it makes sense in terms of ridership to dedicate a bridge lane to buses or light rail. He said that HOT lanes have a much higher ridership capacity than does light rail, and the cost is much lower.

**John Niles**, of the Coalition for Effective Transit Alternatives, spoke to endorse the comments of the two prior speakers. He also questioned the safety of light rail at the projected 276 trains per day running through the central part of Seattle at 30 miles per hour and with 18 at-grade crossings.

## **April 5, Afternoon Session**

### ***Responses to Panel Questions from 4/4/05***

#### **Impact of Gas Tax**

Bob Harvey addressed the question the Panel asked the prior day about the possible impact on transit ridership of high gas prices. He said that longer trips are the ones most affected by the cost of auto travel. Doubling the price of gas might increase auto operating costs by 50 percent, which would be expected to bring a 15 percent increase in transit ridership. Mr. Harvey noted that this is based on PSRC's cost coefficients, but PSRC may be revising the coefficients upward in the next six months.

#### **405 Interchanges with I-90 and Highway 520**

Craig Stone and Mike Cummings of WSDOT discussed I-405 and the connections to I-90 and Highway 520. They said that the Record of Decision for 405 involved expanding two lanes in each direction, adding access through Park and Ride lots, adding interchanges to major highways, freeway to freeway HOV connections, and a future "managed lane" concept for north-south traffic. The interchanges would be phased in, one quadrant at a time. Based on the master plan layout of the interchanges, and completion of one percent of the engineering, the cost to rebuild the interchanges is estimated at approximately \$1 billion for each interchange. Mr. Stone noted that HOV lanes are a major mode of traffic movement on 405, and that 80 percent of the HOV trips are *not* transit.

#### **Questions from the Panel**

Q. Could BRT ramps be retrofitted in without a change in the roadway?

A. Some revision would be needed in order to fit them in with the interchanges. For an exclusive BRT, there needs to be consideration not only of freeway ramps on I-90 but where the BRT would be routed in the corridor.

Q. Are there cost estimates for phasing construction of the interchanges?

A. WSDOT has examined several phasing options, including the construction of different quadrants of the interchange. WSDOT would have greater ability to stage construction of quadrants at the I-90/405 interchange than at the 520/405 interchange. Construction of a freeway to freeway HOV connection in the northwest quadrant of I-405/I-90 is estimated in the range of \$300 to \$500 million.

Q. If there were a reasonable set of options to tie in BRT to WSDOT's work on I-405, would the Record of Decision stand in the way? Is there a formal policy against bus-only ramps?

A. No. The Record of Decision allows transition to a "managed lane" concept in the future. The question is how the agency wants to manage the traffic corridor.

Q. If BRT were in the interchange design, would only a portion of the cost go to Sound Transit?

A. That is likely. There is funding in the WSDOT program to improve the interchanges for freeway-to-freeway traffic. However, the costs are different for HOV lanes and bus-only access ramps.

Q. Are there issues the Panel should consider regarding the entire interchange?

A. One key question is what the HOV would look like going into Bellevue. On I-405, WSDOT's policy is to have two managed lanes. That would allow BRT to use one of the lanes.

Q. Are there issues for Highway 520?

A. The Redmond-Bellevue connection at I-405/SR 520 is very tight. Having a bus-only freeway to freeway connection would preclude HOV connections. That would be an issue because of the WSDOT policy related to HOV for speed and reliability.

(NOTE: As a result of follow-on work between WSDOT and Sound Transit, several of the stated answers during this Q & A session have evolved. Sound Transit has recently issued a supplemental paper on the I-90 East King County HCT Corridor Study revising original cost estimates for freeway to freeway HOV connections. The revised paper is available on Sound Transit's web site, at [www.soundtransit.org/projects/longrange/issuepapers.asp](http://www.soundtransit.org/projects/longrange/issuepapers.asp)).

### **Rail Transit on the I-90 Bridge**

Art Borst of Parsons Brinckerhoff Quade and Douglas is a consultant to Sound Transit. He spoke to the question of the I-90 bridge's ability to handle transit lines.

There are two main issues for traffic and rail on the bridge: (1) the transition from land to water, and (2) the vehicle speed and bridge movement. The movement of a floating bridge is similar to that of a long-span suspension bridge. For example, the Tagus River bridge in Portugal, built in 1966 and retrofit in the late 1990s, has a 3,000-foot span between towers. Another is the Sky Train bridge over the Frazier River in Vancouver, B.C., which has a less than 2,000-foot span.

For such bridges, and for the I-90 bridge, there are several kinds of movement: up and down movement caused by wind (and water, for the floating bridge); side to side twisting; and longitudinal movement like an accordion, caused by temperature changes. As the train goes across, the movement is not uniform since the train is not always in the exact center of the span.

However, the train crosses transition joints on the bridge, which are built to soften the impact of the movement.

Engineers would need to consider the two feet of movement the I-90 bridge is designed to accommodate, and then what joints for the train would accommodate that movement. To date completed engineering is at five percent.

### **Questions from the Panel**

Q. Has anyone contacted the manufacturer of the light rail trains to ask about their ability to handle bridge movement? Will Sound Transit be getting recommendations about speed and other operational issues from the manufacturer?

A. Now that a company is under contract to supply trains for the initial light rail line, Sound Transit will contact them about these issues.

Q. What about the effects of water washing across the bridge?

A. WSDOT monitors the weather closely, and during severe stormy weather, closes the floating bridges.

Q. Would there be speed limitations for the trains?

A. There will be conditions under which the train would need to reduce speed.

Q. Are there design standards for trains related to bridges?

A. Yes, all rail joints must accommodate movements of bridge joints.

Q. What type of rail is on the bridge in Portugal?

A. Heavy rail, both freight and passenger. It has been operating for five years since the retrofitting.

### ***Briefing on Potential Rail Extensions to Frederickson and Orting (Issue Paper S-2)***

—Eric Chipps (Sound Transit)

This paper looks at existing rail corridors that could be used for commuter or all day passenger service. There are currently limited transportation services that serve these communities.

Currently the City of Tacoma's Mountain Division rail line connects the Port of Tacoma and the Tacoma Dome with Frederickson. The line is owned by Tacoma Rail, which operates limited freight service. Frederickson is designated by the Puget Sound Regional Council (PSRC) as a Manufacturing/Industrial Center - a growth area for manufacturing. The concept is to use the 11-mile corridor for passenger rail. The track condition is adequate for limited freight activity, but would require upgrading for passenger service. Three stations were assumed: Frederickson, Highway 512, and 157<sup>th</sup> Street in south Tacoma. Between Tacoma and Frederickson the line would serve an area that is mostly low-density single family developments, with some neighborhood commercial centers. The further from Tacoma the more rural in character.

The Orting rail line is in private ownership. It is single track and is used for occasional freight service. The track would need upgrading. Orting is an older community at the edge of the urban

growth boundary. Traditionally, it has been a logging area, but it is starting to grow, with new subdivisions. Orting is in a valley flanked by bluffs, so access may be challenging.

Both corridors are single track. They would need some passing track in order to offer regular service.

For ridership, the projection is 830 riders/day for Frederickson (approximately 400 inbound, 400 outbound), assuming all-day service operating every 30 minutes. The capital cost would be \$200 million to \$250 million. Between I-5 and Frederickson are two large military bases. Currently there is no way to move easily between them. WSDOT is considering a cross-base highway. If that goes forward, there would be new access to Frederickson, which might impact rail use.

For Orting the ridership projection is 200 riders/day. This would be commute-period service. The capital cost would be \$80 million to \$100 million.

### **Questions from the Panel**

Q. Are these corridors in the Long-Range Plan?

A. No. Sound Transit looked at these corridors because of comments received from local jurisdictions and Board members during the scoping process. The greatest level of interest was for serving Frederickson, since it is designated as a manufacturing-industrial growth area.

Q. Is there existing transit?

A. Little. Frederickson has one bus, once an hour. Orting has none. There is also no direct road from Frederickson to downtown Tacoma. In Orting, there is a state highway, but it is only two lanes and gets crowded.

Q. If the lines were converted to passenger, what would happen to the freight service?

A. It depends on the corridor owner and their needs. For example, for the Seattle-Tacoma BNSF line, BNSF still runs freight trains outside of peak hours. Sound Transit has made major improvements to the line. For the line south of Tacoma, Sound Transit bought the line, and Tacoma Rail operates one or two trains a day through a short-line agreement with BNSF. BNSF has been a very good partner on the operations side.

Q. Does Sound Transit have right of eminent domain?

A. Yes. Also, in the Growth Management Act, jurisdictions are encouraged to support transit through zoning and right-of-way preservation.

Q. In the priority of need, are these rail extensions the lowest?

A. These are low on the list of ridership potential. The Board will determine the priorities.

### ***Briefing on High-Capacity Transit between Burien and Renton (Issue Paper S-5)***

—Eric Chippis

This study looked at the potential to connect the communities of Burien, SeaTac, Tukwila and Renton via light rail, and to connect this line with the Central Link light rail line between Seattle and Sea-Tac Airport. This connection would be located along the east-west segment of Central

Link that parallels SR 518. The purpose was not to select a specific alignment, but to study potential alignments, station locations, estimated ridership, and costs.

There are numerous barriers and limited right-of-way between Tukwila and Renton, which would require major portions of the line to be elevated. Between Tukwila and Burien the line could be at grade. The line was modeled as a stand-alone system with transfer capability to Central Link light rail. An important question is whether the line would share some track with Central Link or have its own track. If track is shared, junctions would be required on each side of the Tukwila/International Boulevard station, and possible shut-downs of service would be required while the line is under construction. If separate, the line would need a separate maintenance facility and a separate station co-located at the Tukwila/International Boulevard station to allow transfers. The study estimated 24,000 riders by 2030, and a cost of \$1 billion to \$1.4 billion.

The connection of SeaTac and Renton is in the Long-Range Plan for a future rail extension. The Burien to SeaTac segment is not in the Long-Range Plan.

### **Question from the Panel**

Q. Could trains use the existing maintenance facility in off-hours?

A. It is possible (up to a certain level of operating frequency on Central Link) and this would save money, but it would require building junctions, which would mean some shutdown of service for the Central Link.

### ***Next Steps for the Panel***

### **Letter with Findings before June Sound Transit Board Meeting**

The Panel decided to develop a letter with findings to send to the sponsor agencies before the June meeting of the Sound Transit Board. The Panel will develop the letter by e-mail and phone call (if needed).

The purposes of the letter are to:

- Inform the Panel's sponsor agencies of issues that Panel believes might warrant some further thinking; and
- Comment on methodologies and assumptions the Panel has reviewed so that these comments can be considered for the Sound Transit Board's decision-making process in June.

The letter should be concise – Mr. Meyer recommended three to four pages in length. The Panel's sponsors have not specifically requested this letter, but the Panel believes the communication would be useful given the impact of decisions the Sound Transit Board will make in June.

Mr. Meyer recommended the following process for developing the letter:

- A Panel member with expertise in each topic will take the lead to develop that part of the letter.
- Panel members will send their draft section to Mr. Howell (approximately two paragraphs each).



- Mr. Howell will compile and weave together the sections.
- He will send the draft letter to all the Panel members for review and comment.

The Panel decided that the letter will cover six topics relating to ridership and cost, and agreed to the following assignments:

1. Population and employment forecasting – *Lead*: Siim Sööt, with assistance from Steve Lundin
2. Ridership forecasting – *Lead*: Mike Meyer, with assistance from Alan Kiepper
3. Transit network specifications and assumptions for future operations – *Lead*: Mike Meyer, with assistance from Alonzo Wertz
4. Cost estimation – *Lead*: Bill Lorenz, with assistance from Darlene Cimino-DeRose
5. Engineering feasibility – Tom Schmitt, with assistance from Bill Lorenz
6. Network integration and connections issues (systemic issues, such as the I-90/405 interchange) – *Lead*: Mike Meyer, with assistance from Siim Sööt

The Sound Transit Board meeting will be on June 23, with informational packets to go out by June 16. Therefore, the Panel decided to draft the letter in early May, and to finalize and send it by the end of May.

### **Next Panel Meeting**

The original schedule called for a Panel meeting in September. However, after discussion with Sound Transit staff it was suggested that the Panel meet after the Long-Range Plan has been adopted and Sound Transit is prepared to discuss additional methodologies and assumptions that will be used to prepare recommendations for ST2.

The Panel members identified two choices in October for meeting dates. Once all members had checked their availability, the dates chosen were: Thursday, October 20 and Friday, October 21, 2005.

The meeting adjourned at 2:55 PM.

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